

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended): An integrated pixel sensor structure comprising:
a set of light sensitive diodes including a transparent conductor, the set of light sensitive diodes including an n-layer, an i-layer and a p-layer; and,
a protective layer placed above the transparent conductor, ~~the protective layer including a set of~~
a set of separated echelon diffraction grating elements for producing complementary colors and to protect the set of light sensitive diodes, the protective layer disposed between adjacent echelon diffraction grating elements of the set of separated echelon diffraction grating elements,
wherein the protective layer is of a sol gel material.

Claim 2 (Original): The structure of claim 1, where the protective layer includes anti-reflection properties.

Claim 3 (Currently Amended): The structure of claim 1, where each light sensitive diode of the set of light sensitive diodes is compatible with the protective layer and the protective layer is a material suitable for use with metal oxide semiconductor fabrication processes.

Claim 4 (Currently Amended): The structure of claim 1, where the set of separated echelon diffraction grating elements include a set of four step echelon grating elements.

Claim 5 (Currently Amended): A system comprising:
an integrated pixel sensor structure having:

a set of light sensitive diodes including a transparent conductor, the set of light sensitive diodes including an n-layer, an i-layer and a p-layer;
a protective layer placed above the transparent conductor, and
a set of echelon diffraction grating elements for producing complementary colors and to protect the set of light sensitive diodes, the set of echelon diffraction grating elements placed above the transparent conductor, the protective layer

disposed between adjacent echelon diffraction grating elements of the set of echelon diffraction grating elements; and,
a post capture signal processing unit coupled to the integrated pixel sensor,
wherein the protective layer is of a sol gel material.

Claim 6 (Original): The system of claim 5, where the protective layer includes anti-reflection properties.

Claim 7 (Currently Amended): The system of claim 5, where the protective layer is ~~of a sol gel material~~ suitable for fabrication processes that are compatible with the light sensitive diode.

Claim 8 (Original): The system of claim 5, where the set of echelon diffraction grating elements include a set of four step echelon grating elements.

Claims 9-12 (Canceled)

Claim 13 (Currently Amended): A method comprising:
providing a set of light sensitive elements, the set of light sensitive elements including an n-layer, an i-layer and a p-layer;
placing a transparent conductor above the light sensitive element;
placing a protective layer of a sol gel material above the transparent conductor,
and

a set of echelon diffraction grating elements for producing complementary colors, the protective layer disposed between adjacent echelon diffraction grating elements of the set of echelon diffraction grating elements, wherein the set of echelon diffraction grating elements to protect the set of light sensitive elements.

Claim 14 (Original): The method of claim 13, where placing the protective layer includes placing a material with anti-reflection properties above the transparent conductor.

Claim 15 (Original): The method of claim 13, where placing the protective layer includes placing a material suitable for fabrication processes that are compatible with the light sensitive element.

Claim 16 (Original): The method of claim 13, where the set of echelon diffraction grating elements include a set of four step echelon grating elements.

Claim 17 (Currently Amended): An integrated circuit die comprising:
an image sensing area of the die having a plurality of light-sensitive diodes formed above a metalization layer of the die; and
a protective layer of the die, wherein the protective layer is to protect the plurality of diodes and includes a plurality of echelon diffraction gratings, the plurality of light sensitive diodes have a transparent conductor that forms a top contact of the plurality of light sensitive diodes and wherein the protective layer has a low enough deposition temperature so as not to environmentally stress the transparent conductor, and the protective layer covers a portion of the transparent layer not covered by the plurality of echelon diffraction gratings,
wherein the protective layer is of a sol gel material.

Claim 18 (Previously Presented): The integrated circuit die of claim 17 wherein the plurality of diodes have amorphous silicon as their photo-active material.

Claim 19 (Previously Presented): The integrated circuit die of claim 18 wherein each of the plurality of diodes has a n-i-p structure.

Claim 20 (Previously Presented): The integrated circuit die of claim 19 wherein each of the n and p portions of the n-i-p structure is thin relative to the i portion.

Claim 21 (Previously Presented): The integrated circuit die of claim 18 wherein the plurality of diodes have a transparent conductor made of an indium tin oxide (ITO) layer that forms a top contact of the plurality of diodes.

Claim 22 (Canceled)

Claim 23 (Previously Presented): The integrated circuit die of claim 17 wherein the protective layer has anti-reflective properties to act as an antireflective filter for the image sensing area of the die.

Claim 24 (Currently Amended): The integrated circuit die of ~~claim 22~~claim 17 wherein the echelon diffraction grating is designed to impart RGB color sensing to the image sensing area of the die.

Claim 25 (Currently Amended): The integrated circuit die of ~~claim 22~~claim 17 wherein the protective layer is made of a sol-gel material.

Claim 26 (Previously Presented): The integrated circuit die of claim 17 wherein the plurality of diodes and the protective layer are compatible with a metal oxide semiconductor (MOS) fabrication process.